CT Healthcare Cost Estimator Tool Technical Notes, v.2

October 2022

INTRODUCTION

The CT Healthcare Cost Estimator Tool (CET) provides cost estimates of common inpatient and outpatient medical services, based on commercial claims data submitted to Connecticut's All Payer Claims Database (APCD). The claims for services used in the CET occurred from October 1, 2018 – September 30, 2019. Averages are based on claims data from coverage plans purchased on the state's health insurance marketplace (Access Health, CT), and employer-sponsored and state employee health care plans, and therefore are not representative of Medicare or Medicaid/CHIP costs. The estimates reflect average service costs for selected procedures and should not be interpreted as quotes or guarantees of medical service costs. This document summarizes the data and methods used to create the CET. Appendices show definitions of data elements used in the CET.

ANALYTIC POPULATION

The CET uses an analytic file produced using commercial medical claims in Connecticut's APCD. The APCD receives claims from fully insured plans and the state employees and partnership self-insured plans. Except for the latter two plans, claims for self-insured plans which comprise about half of CT's commercial market, are not submitted to the APCD because of the Liberty Mutual vs Gobeille Decision.[1] Medical claims utilized in the CET represent payments for medical services only, they exclude retail pharmacy, vision, and dental service claims

The following claims are excluded from the analytic population:

1. Non-commercial claims
2. Denied, reversed, or non-primary claims (header_status not equal to 01, 19, -1, or -2)
3. Orphaned claims (orphaned_header_flag = Y)
4. Claims with negative paid (paid_amt) or negative cost sharing (copay_amt + coinsurance_amt + deductible_amt) amounts across all claim lines
5. Claims with $0 total payments
6. Claims paid outside of the runout period. That is, claim header records with a paid date after June 30 of the year following the date of service.
7. Claims without a matching member month record. To match, the member month record must have the same member (internal_member_id) and payer (medical_submitter_id) and

[1] For more information about the Gobeille decision on self-insured or Employee Retirement Income Security Act (ERISA) governed plans and how it has impacted APCD please read: https://www.dol.gov/sites/dolgov/files/ebsa/about-ebsa/about-us/state-all-payer-claims-databases-advisory-committee/final-report-and-recommendations-2021.pdf

be active during the month when services occurred (year_month contains first_service_dt).

8. The sum of spending (insurer payments plus consumer out-of-pocket payments) reported on the claim lines associated with a medical header record must equal the allowed_amount reported on the header record, within a $10 margin. We excluded 0.04 percent of outpatient claims that did not meet this criterion. The exclusion does not apply to inpatient claims, where costs are based on the medical header record.

The population is restricted to Connecticut residents (out_of_state_flag = N).

The outpatient population is restricted to claims that occurred in hospitals (place_of_setting = 1 or 7) or free-standing ambulatory surgery centers (place_of_setting = 8). These are defined as facility types (fac_type) in the analytic file. The tool displays average outpatient costs for both settings for comparison.

Services with less than 11 instances are excluded, that is. A small number (n<11) of inpatient claims that were associated with multiple discharges are also excluded.

UNITS OF ANALYSIS

Inpatient. The unit of analysis for inpatient procedures is an inpatient discharge (inpatient_discharge_id) that occur in an inpatient setting (type_of_setting_id = 1). A unique Diagnosis-Related Group (DRG) code is assigned to each inpatient discharge. Cost estimates are based on average costs for the selected DRG and insurance payer.[2] If the user selects "Non-specified payer," inpatient costs are averaged for the selected DRG across all payers.

Outpatient. Outpatient units are built by grouping professional (type_of_setting = 3) and outpatient (type_of_setting = 2) claims[3] into one unit if they match on the following variables: internal_member_id, first_service_dt, procedure_code, submitter_id, fac_type. That is, outpatient units include both professional and facility fees for services that occur on the same day for the same member in the same facility type with the same procedure and insurance payer. Outpatient cost estimates are based on average costs for the selected procedure. Outpatient procedures are defined by Current Procedural Terminology (CPT) and Healthcare Common Procedure Coding System (HCPCS) codes. Cost estimates are based on average costs for the selected CPT/HCPCS code and insurance payer. If the user selects "Non-specified payer," outpatient costs are averaged for the CPT/HCPCS across all payers.

PAYMENT LOGIC

As noted above, claims with costs less than or equal to $0 are excluded. Claims with negative out-of-pocket have their out-of-pocket costs set at $0.

[2] The CT APCD Data Dictionary describes the DRG as follows: This field is not reported by the carrier. This field is assigned by the claims records for the inpatient stay through the 3M™ APR-DRG grouper software or the open-source CMS-DRG grouper software.

[3] Outpatient and professional claims are identified by their unique medical_claim_line_service_id

Costs are Windsorized at the 99th percentile for inpatient and outpatient procedures, meaning that costs in the highest percentile for a given procedure are set equal to the 99th percentile. This mitigates the impact of outliers on averages.

Total Costs include payment from insurance and consumer out-of-pocket payments. The formula for estimating average total costs is:

> If prepaid = 0, then Average(paid+copay+coinsurance+deductible), else Average(prepaid+copay+coinsurance+deductible)

Paid and prepaid represent insurance payments, and copay, coinsurance and deductible represent consumer out-of-pocket payments (see appendices).

Inpatient costs are averaged across all inpatient settings. Outpatient costs are presented for two types of settings: hospital (place_of_setting_id = 7) and free-standing clinic (place_of_setting_id = 8).

If users click on the Total Cost amount for an outpatient procedure, a pop-up window with details of costs will appear, including a hyperlink "Check total cost breakdown." Clicking this link breaks down total costs into facility and professional fees. Facility fees are costs with outpatient claims in the outpatient unit (type_of_setting = 2) and professional fees are costs associated with professional claims in the outpatient unit (type_of_setting = 3).

As noted above, total costs for a given procedure are Windsorized at the 99th percentile. For outpatient units in the highest cost percentile, facility and professional fees are adjusted based on their relative contribution to the cost of the unit. For example, if an outpatient unit in the highest percentile costs $1,200, with $600 from facility fees and $600 in professional fees, and the 99th percentile for that procedure is $1,000, total costs will be reset to $1,000 and facility and professional fees will be reset at $500 each.

APPENDIX A. Inpatient data dictionary

Variable	Definition	Values
Payer_Group	Payer Group	COMMERCIAL. (MEDICAID and MEDICARE will be added in the future)
Payer	Payer	Aetna, Anthem, Cigna, Connecticare, Harvard Pilgrim Health Care, United Healthcare, non-specified payer
IP_OP	Assigns row to inpatient or outpatient pathway	Inpatient
IP_DRG	Inpatient Diagnosis Related Group	
IP_DRG_Desc	Inpatient Diagnosis Related Group Description	
IP_DRG_Version	Inpatient Diagnosis Related Group Version	
IP_DRG_Category_code	Inpatient Diagnosis Related Group Category Code. Developed by Connecticut's Office of Health Strategy, assigns DRG codes to service line categories.	
IP_DRG_Category_desc	Inpatient Diagnosis Related Group Category. Developed by Connecticut's Office of Health Strategy, assigns DRG codes to service line categories.	
Est_Cost	Estimated cost equals the average allowed amount, including insurer payments and consumer out-of-pocket payments, for selected procedure and payer combination.	
Est_OOP	Estimated out-of-pocket cost equals the average of consumer out-of-pocket payments, including copays, deductibles, and coinsurance, for the selected procedure and payer combination	
Paid_amt	The preset, fixed dollar amount payable by a member, often on a per visit/service basis.	
Prepaid_amt	The fee-for-service equivalent that would have been paid by the healthcare claims processor for a specific service if the service had not been capitated.	
Copay_amt	The preset, fixed dollar amount payable by a member, often on a per visit/service basis.	
Coinsurance_amt	The dollar amount that a member must pay toward the cost of a covered service, which is often a percentage of total cost.	

APPENDIX B. Outpatient data dictionary

Variable	Definition	Values
Payer_Group	Payer Group	COMMERCIAL. (MEDICAID and MEDICARE will be added in the future)
Payer	Payer	Aetna, Anthem, Cigna, Connecticare, Harvard Pilgrim Health Care, United Healthcare, non-specified payer
IP_OP	Assigns row to inpatient or outpatient pathway	Outpatient
Fac_Type	Facility type	Hospital, free standing clinic, all facility types.
OP_CCS	Outpatient Clinical Classifications Software Code. Developed by the Agency for Healthcare Research and Quality Healthcare Cost and Utilization Project (HCUP), v2021.1.	
OP_CCS_Desc	Outpatient Clinical Classifications Software Code Description. Developed by the Agency for Healthcare Research and Quality Healthcare Cost and Utilization Project (HCUP), v2021.1.	
OP_CPT	Outpatient Current Procedure Terminology Code	
OP_CPT_Desc	Outpatient Current Procedure Terminology Code description	
OP_CPT_Category	Outpatient Current Procedure Terminology category. Developed by Mathematica for outpatient procedures included in the Cost Estimator Tool. Assigns CCS categories to broader outpatient groups.	
Paid_amt	The preset, fixed dollar amount payable by a member, often on a per visit/service basis.	
Prepaid_amt	The fee-for-service equivalent that would have been paid by the healthcare claims processor for a specific service if the service had not been capitated.	
Copay_amt	The preset, fixed dollar amount payable by a member, often on a per visit/service basis.	
Coinsurance_amt	The dollar amount that a member must pay toward the cost of a covered service, which is often a percentage of total cost.	
Est_Cost	Estimated cost equals the average allowed amount, including insurer payments and consumer out-of-pocket payments, for selected procedure and payer combination.	
Est_OOP	Estimated out-of-pocket cost equals the average of consumer out-of-pocket payments, including copays, deductibles, and coinsurance, for the selected procedure and payer combination	
Est_Fac_Cost	Estimated facility cost equals the average allowed amount, including insurer payments and consumer out-of-pocket payments, for selected procedure and payer combination and limited to facility fees.	
Est_Prof_Cost	Estimated cost equals the average professional allowed amount, including insurer payments and consumer out-of-pocket payments, for selected procedure and payer combination and limited to professional fees.	